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RE: Reply Comments for Notice of Inquiry Regarding Electric Vehicles 18-NOI-01

Dear Illinois Commerce Commission:

Tesla appreciates the opportunity to provide reply comments regarding the Notice of Inquiry (NOI) issued by the Illinois Commerce Commission (ICC) to better understand and identify the issues, potential challenges, and opportunities in electric vehicle (EV) deployment. In opening comments, Tesla focused on responding to the questions provided in the NOI highlighting three fundamental areas that can help drive EV adoption, which include education and awareness, EV charging station development, and developing rates that reduce the total cost of owning an EV. These three fundamental areas were also referenced in several stakeholders' opening comments, most of which built on the overarching theme that access to charging infrastructure continues to be one of the primary barriers to scaling EV deployment in Illinois.

Given the feedback provided in stakeholders' opening comments, Tesla focuses reply comments on the following points:

- EVs can provide economic, environmental and health benefits to all residents in Illinois and consumer preference for EVs is increasing.
- Rate designs should be optimized to account for intended use cases such as direct current fast charging (DCFC).
- Make-ready infrastructure investment by the utilities is an important pathway for transportation electrification.
- Any utility program requirements or qualifications should be carefully evaluated considering both costs and benefits.



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- Focusing utility programs on vehicle to grid (V2G) capabilities is premature and unnecessary for realizing the benefits of transportation electrification in the near term.

## A. Economic, Environmental and Health Benefits of EVs and Increasing Consumer Demand

### Benefits of EVs

Many stakeholders, including Tesla, in their opening comments provided concrete data for the numerous economic, health and environmental benefits of EVs citing recent reports such as the MJ Bradley & Associates analysis. Sierra Club and the Natural Resources Defense Council (NRDC), for instance, note that “because electricity costs about half that of gasoline even when oil prices are low, Illinoisans have significant potential to save on vehicle fueling costs with EVs and reduce their overall energy costs.”<sup>1</sup> Furthermore, the Union of Concerned Scientists (UCS) states that its report, *Going from Pump to Plug*, found “that in Chicago, Commonwealth Edison (ComEd) customers stand to save \$912 per year in fuel costs on the standard residential rate over the average new gasoline vehicle, even when considering the relatively low gas prices in 2015.”<sup>2</sup> UCS also references the report *Cleaner Cars from Cradle to Grave*, “which concludes that from cradle to grave, electric vehicles on average produce less than half of the global warming emissions of comparable gasoline powered vehicles, even when the higher emissions associated with [EV] manufacturing are taken into account.”<sup>3</sup> Citizens Utility Board (CUB) and the Environmental Defense Fund (EDF) comment that “electrifying personal commutes, ground shipping, deliveries, and fleets will improve local air quality and reduce climate-warming emissions, particularly if designed to take advantage of the availability of clean resources and to shave peaks served by the most expensive, polluting generators.”<sup>4</sup> Finally, ComEd states that “while EV owners may likely realize a larger electric bill due to increased consumption, they will pay less for energy and transportation costs and vehicle maintenance overall.”<sup>5</sup>

Beyond the data in the reports referenced above, stakeholders also note that among the benefits of EVs is that they get cleaner as the grid resources get cleaner, which is something that is not the case for conventional vehicles. While location dependent, a typical mid-size EV can generate up to 67% lower greenhouse gas (GHG) emissions than a gasoline internal combustion engine (ICE) car on a well-to-wheel basis.<sup>6</sup> When looking at data for Illinois from the Department of Energy (DOE), EVs in Illinois have less annual emissions per vehicle than the national average based on the state’s current electricity sources, which only stand to get cleaner with time.<sup>7</sup> Ameren emphasizes this in its opening comments by stating that “as Illinois adds more renewables to its mix of generation sources, such as solar and wind sources, emissions reductions will increase.”<sup>8</sup>

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<sup>1</sup> Sierra Club and NRDC, Opening Comments on 18-NOI-01, Page 3.

<sup>2</sup> UCS, Opening Comments on 18-NOI-01, Page 2.

<sup>3</sup> *Ibid*

<sup>4</sup> CUB and EDF, Opening Comments on 18-NOI-01, Page 3.

<sup>5</sup> ComEd, Opening Comments on 18-NOI-01, Page 7.

<sup>6</sup> Wood Mackenzie, [EVs up to 67% less emissions intensive than ICE cars](#) (Sept. 10, 2018).

<sup>7</sup> DOE, [Emissions from Hybrid and Plug-In Electric Vehicles](#)

<sup>8</sup> Ameren, Opening Comments on 18-NOI-01, Page 11.

## Consumer Preference for EVs

Some stakeholders in their opening comments questioned the viability and benefits of EVs given the relatively lower sales volumes today. As noted in Tesla's opening comments, while the EV market is still relatively small as percentage of total vehicles, it is beginning to scale rapidly, and consumer preference generally is shifting toward EVs. Taking Tesla's growth from 2012 to 2018 as a specific example shows that past projections of consumer acceptance of EV technology have been repeatedly surpassed. In 2012, the light-duty vehicle final rule projected Tesla annual sales for MY 2025 at 31,974 vehicles.<sup>9</sup> Subsequently, in the NHTSA, EPA, and CARB 2016 Joint Technical Assessment Report, Tesla was projected to have a sales volume of 86,636 in MY 2021 and 103,502 in MY 2025.<sup>10</sup> In contrast to these projections, in 2017, Tesla sales volume equaled the MY 2025 projections by selling over 103,000 cars.<sup>11</sup> At the end of Q3 2018, there were almost 450,000 Tesla vehicle owners around the world.<sup>12</sup> In Q3 2018 alone, Tesla delivered more than 83,000 vehicles, including almost 56,000 Tesla Model 3s.<sup>13</sup>

The intense consumer interest also manifests itself in recent consumer surveys that find that "the number of Americans interested in an electric vehicle approaches the number planning to purchase a pickup truck,"<sup>14</sup> and interest in EVs has rapidly increased to the point that "20 percent or 50 million Americans will likely go electric for their next vehicle purchase."<sup>15</sup> Indeed, the U.S. government itself recognizes a number of other consumer benefits from EV technology including that "plug-in electric vehicles can help increase energy security, improve fuel economy, lower fuel costs, and reduce emissions."<sup>16</sup>

As consumer preference for EVs is expanding, costs for EVs especially when looking at total cost of ownership are also decreasing. From 2008 to 2017, Tesla has decreased the cost of its electric drive unit nearly 80% and projects that the cost will continue to decrease while performance continues to increase. Similarly, at the end of 2017, Merrill Lynch analysts predicted EVs in the U.S. will be cheaper than their traditional counterparts by 2024, and just the year prior they had estimated it would take until 2030.<sup>17</sup> Finally, Bloomberg predicts EVs may be cheaper than their petroleum counterparts by 2025 as the cost of lithium-ion batteries continues to fall.<sup>18</sup>

## **B. Rate Design for DCFC**

Many stakeholders including ABB, ChargePoint, Advanced Energy Economy (AEE), EVgo, ComEd, Sierra Club, NRDC, UCS, the Alliance for Transportation Electrification, CUB and EDF reference the negative impact demand charges have on DCFC deployment. EVgo notes that "current commercial rate structures were not designed with

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<sup>9</sup> EPA, NHTSA, [2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards](#), 77 Fed. Reg. 62624, 62679 (Oct. 15, 2012); See also, EPA, NHTSA, [Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards: Final Rule](#), 75 Fed. Reg. 25324, 25675 (May 7, 2010) (noting that at that time Tesla had less than 1,000 employees and made less than 1,000 vehicles per year).

<sup>10</sup> EPA, NHTSA, CARB, [Draft Technical Assessment Report: Midterm Evaluation of Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards for Model Years 2022-2025](#) (July 2016) at 4-38 (MY 2021 projections); at 4-20 (MY 2025 projections).

<sup>11</sup> Tesla, Inc., [S.E.C. Form 10-K](#) (Feb. 22, 2018),<sup>†</sup> Page 39.

<sup>12</sup> Tesla, [Tesla Third Quarter 2018 Update](#), Page 3.

<sup>13</sup> Tesla, [Tesla Q3 2018 Vehicle Production and Deliveries](#) (Oct. 2, 2018).

<sup>14</sup> AAA, [Consumer Appetite for Electric Vehicles Rivals Pickups](#) (April 18, 2017);

<sup>15</sup> AAA, [1-in-5 U.S. Drivers Want an Electric Vehicle](#) (May 8, 2018).

<sup>16</sup> U.S. Department of Energy, [Electric Vehicle Benefits and Considerations](#)

<sup>17</sup> New York Times, [What Needs to Happen Before Electric Cars Take Over the World](#) (Dec. 19, 2017).

<sup>18</sup> Bloomberg, [Electric Cars May Be Cheaper than Gas Guzzlers in Seven Years](#) (March 22, 2018); Axios, [The race for the next billion cars](#) (Sept 27, 2018).

electric vehicles' unique load profiles." ABB also states that "demand charges or tariffs are also a significant barrier to increased electrification as they make the business model for charging very difficult." ChargePoint further "encourages the Commission to prioritize consideration for whether traditional, demand-based commercial rate structures are aligned with facilitating DC fast charging as the Illinois EV market grows."<sup>19</sup> In its opening comments, Tesla indicated support for demand charge-free or reduced rates for commercial customers deploying both Level 2 and DC fast charging and provided a chart of commercial EV charging rates examples across the country where demand charges have been addressed. Given the numerous comments on current rate design issues for DCFC, Tesla agrees that the Commission should evaluate commercial EV charging rates and encourage the utilities to file applications to address this issue, similar to what has been done in California,<sup>20</sup> Nevada<sup>21</sup> and other states.

### **C. Make-Ready Infrastructure Utility Investment**

Most stakeholders cite access to and cost of charging infrastructure as one of the primary barriers to EV deployment. While there are differences in opinion regarding appropriate ownership models and the overall role of the utility, as EVgo points out in its opening comments, generally, "one area where there is consensus on utility investment is in the "make-ready" infrastructure."<sup>22</sup> At the current stage of the EV market in Illinois, providing access to charging infrastructure including make-ready<sup>23</sup>, especially for multifamily buildings and workplaces, is critically important. Therefore, given the general consensus regarding the importance of make-ready infrastructure investments, the Commission can at minimum encourage utility investment in make-ready infrastructure, which can complement private investment in charging infrastructure and leverage other public funds.

### **D. Program Requirements Costs and Benefits**

Among the issues discussed in stakeholders' opening comments were various recommendations on how to establish detailed utility program qualification requirements. As discussed in Tesla's opening comments, while it is important to ensure that charging equipment that is deployed meets applicable safety standards, such as being certified by a Nationally Recognized Testing Lab, any initial program requirements or qualifications for charging standards should not be overly prescriptive at the early stage of investment in charging infrastructure in Illinois and should rather focus on effectively scaling infrastructure deployment first and foremost.

At the same time, it is important to recognize where it is appropriate for the Commission to set standards (whether for billing, interoperability, communications or the actual connector). For instance, it is inappropriate to dictate the types of investments, technologies or business models that private companies should adopt on their side of the meter. No Public Utility Commission in North America has adopted interoperability standards or "single-protocol" for charging stations. For publicly funded charging stations, the Commission can determine applicable standards as it deems appropriate, similar to what has been done in California and Washington.<sup>24</sup>

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<sup>19</sup> ChargePoint, Opening Comments on 18-NOI-01, Page 7.

<sup>20</sup> CA PUC, [SB 350 TE Reporting Requirements](#).

<sup>21</sup> NV PUC, [Docket No.17-08021](#), Page 11.

<sup>22</sup> EVgo, Opening Comments on 18-NOI-01, Page 1.

<sup>23</sup> See Tesla Opening Comments on 18-NOI-01 for detailed description of "make-ready" infrastructure.

<sup>24</sup> CA PUC, [Transportation Electrification Activities Pursuant to Senate Bill 350](#). ; WA UTC, Electric [Vehicle Supply Equipment](#), Docket UE-160799

Generally, Tesla recommends utilizing the following five principles when evaluating initial utility program requirements or qualifications such as interoperability and standards:

- 1) Start from a place of universal understanding, including defining levels of interoperability and standards prior to considering if, how and when these may be utilized,
- 2) Include driver charging uses cases (i.e. home, workplace, fleet, corridor etc.),
- 3) Distinguish between public versus privately funded charging infrastructure,
- 4) Establish that customer experience, impact and choice are key elements of evaluating any program or pilot design requirements, and
- 5) Carefully evaluate the costs and benefits of any requirements that would apply across all charging stations.

## **E. Vehicle to Grid (V2G)**

In opening comments, Tesla stressed the need to carefully define the terms associated with vehicle grid integration (VGI), such as V1G and V2G, prior to holding any detailed discussions at the Commission regarding pilot opportunities. While stakeholders see opportunity for V1G including managed charging and time of use (TOU) rates currently, several stakeholders provide similar comments regarding the early stages of V2G applications. ABB for instance states that “this utilizes bi-directional charging and is still in the early stages of development and piloting.”<sup>25</sup> Sierra Club and NRDC echo this sentiment stating that “although the potential for EVs to transmit electricity back into the grid, represents one type of vehicle-grid integration, the necessary technology for that type of bi-directional power flow is still emerging.”<sup>26</sup> ChargePoint notes that “there are several challenges to the mass deployment of this type of functionality [V2G], including: vehicle battery warranty concerns, vehicle technological capabilities, metering and telemetry requirements, interconnection rules to ensure safe grid operations, comprehensive control algorithms, and contractual requirements that would provide sufficient value to all parties.”<sup>27</sup> Even as more complex programs are developed in the future, customer experience considerations and value should continue to be at the forefront of any VGI discussions and programs should be opt-in. Today, creating customer price signals via TOU rates and encouraging or managing Level 2 charging where vehicles are parked for several hours at the right time(s), will provide the most valuable grid benefits for integrating EVs. Therefore, given the current nascent state of the Illinois EV market, the Commission should not make advanced V2G a primary focus of any early program guidance.

## **F. Conclusion**

As stated in Tesla’s opening comments, the NOI is a good first step toward gathering information and enabling the Commission to provide high level guidance on how utilities can help overcome barriers to EV deployment in Illinois. Sierra Club and NRDC further suggest that the Commission develop a report that summarizes actions and next steps, which could be a useful exercise for the Commission to undertake at this point.<sup>28</sup> When developing high

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<sup>25</sup> ABB, Opening Comments on 18-NOI-01, Page 4.

<sup>26</sup> Sierra Club and NRDC, Opening Comments on 18-NOI-01, Page 6.

<sup>27</sup> ChargePoint, Opening Comments on 18-NOI-01, Page 5.

<sup>28</sup> Sierra Club and NRDC, Opening Comments on 18-NOI-01, Page 1.

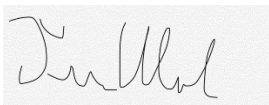
level guidance for utility investments in transportation electrification, the Commission can consider the following recommendations:

- Initial utility programs can focus on charging infrastructure, rate design, and education and outreach but should not be overly complicated.
- Access to level 2 charging infrastructure for multifamily dwellings, workplaces and public locations is an important element of any initial utility program design to increase EV deployment.
- Any initial publicly-funded program design elements or qualifications, including interoperability and standards, should be evaluated in the context of various charging use cases (work, home, fleet etc.) and customer experience, costs and benefits without becoming too prescriptive.

Tesla continues to believe that using a collaborative process with clear timelines and incorporating the many perspectives of EV stakeholders, with utilities and policy makers at the center, will help educate and steer Illinois in developing programs that encourage EV adoption and savings in the state—as the growth of EVs complements established objectives in Illinois of promoting clean energy and reducing greenhouse gas emissions.

Tesla looks forward to collaborating further with the Commission and stakeholders on this effort to help drive EV adoption in Illinois.

Sincerely,

A handwritten signature in black ink, appearing to read 'Francesca Wahl', on a light gray rectangular background.

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